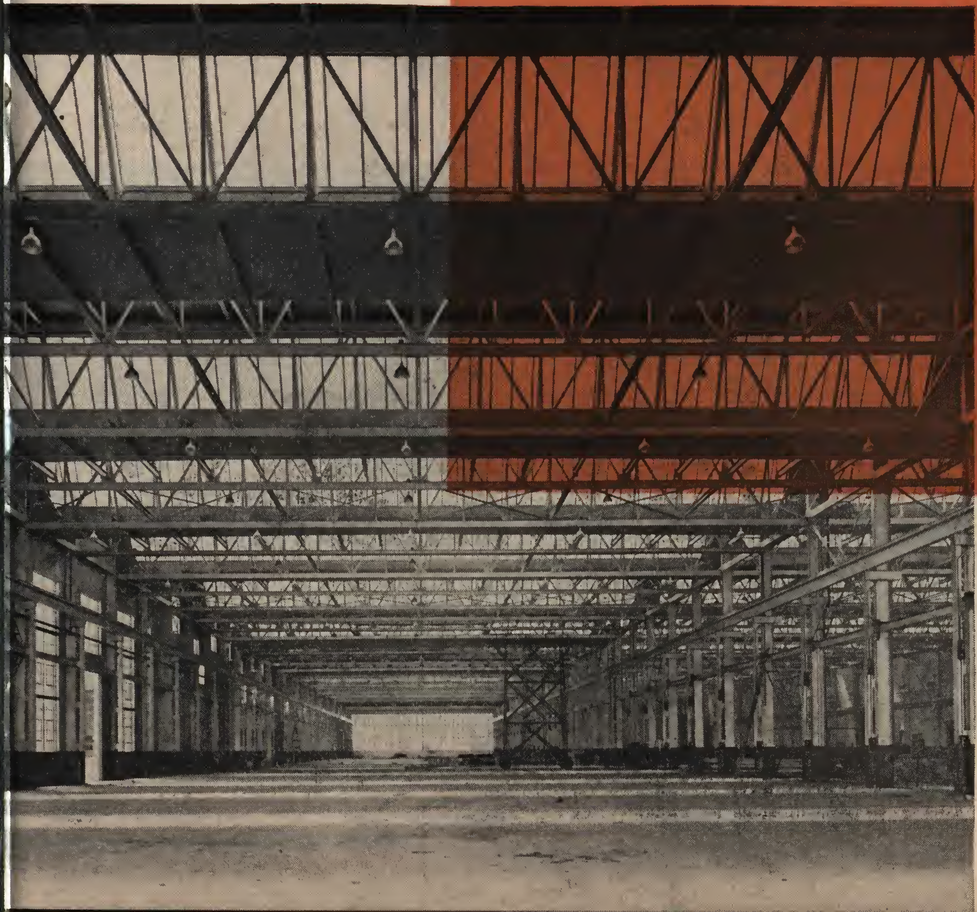
design your daylighting with... Pennsylvania corrugated wire glass



PENNSYLVANIA WIRE GLASS COMPANY

Glass the PROVED material for designed daylighting

Daylight is one of the world's most prized possessions. It has a cheering and healthful effect on humans wherever they may be. For these reasons modern buildings are being carefully designed to provide as much daylight inside as possible.

Outdoors daylight is cheap. Indoors it may be expensive. This is so important that bringing daylight inside a building through skylights, sidewalls and windows is a major design and economic problem for all factors of the building industry.

No matter what type of light transmitting product is selected, the owner pays for his daylight at a rate dependent upon the light transmitting quality of the product. The selection of a product which will provide maximum light transmission at minimum cost over the life of the building and at the same time meet other economic factors deserves the most searching study.

Glass is the *proved* daylighting material

For centuries glass has been the only product which can meet successfully all of the qualifications for a satisfactory daylighting material. Some of these characteristics are outlined below:

Check List

LIGHT transmission: Pennsylvania Corrugated Wire Glass (Type 111B in Fed. Specs. DD-G-451a) transmits approximately 83% of direct sunlight and 81% of diffused blue sky (North light). This compares with transparent glass ¼″ thick which transmits approximately 88% of sunlight and 82% of diffused blue sky.

hardness—Because glass is hard it provides permanent protection against the abrasive action of dirt in the atmosphere. This is especially important in heavily industrialized areas.

acid resistant—Glass is highly resistant to practically all atmospheric gases, acids and rarely shows etching even over long periods of exposure.

fire resistant—Glass will not burn, char or support combustion. Its protection against fires has saved many lives and millions of dollars in property damage.

long-life—Due to the inherent characteristics of Corrugated Wire Glass, low maintenance costs and long-life are vitally important features of any Corrugated Wire Glass installation.

sanitary—Glass is easy to clean and more sanitary than some materials used for the same purposes.

strong and rigid—In its different forms glass is available to meet unusual strength and rigidity requirements and retains these properties under all normal conditions.

stable—The expansion and contraction of glass due to weather temperature changes can be foreseen and provided for in the design of sidewalls and skylights.

versatile—Glass is available in many forms but the type selected should meet the most exacting conditions for skylight and sidewall construction. Corrugated wire glass, white or actinic (Heat Absorbing) types provide the designer with a glass which meets the most exacting conditions.

Corrugated Wire Glass

Like metals glass is stronger when corrugated. It can span greater distances without supporting frames. With wire embedded corrugated glass will not shatter under impact.

Corrugated Wire Glass used in skylights can span up to five feet between roof purlins without any longitudinal support or danger from sagging. The clear span can be eight feet when Corrugated Wire Glass is used for sawtooth, vertical monitors or sidewall windows. Corrugated Wire Glass is ⅜″ thick and 2.52″ between corrugations. It meets the requirements of Federal Specification DD-G-451a.

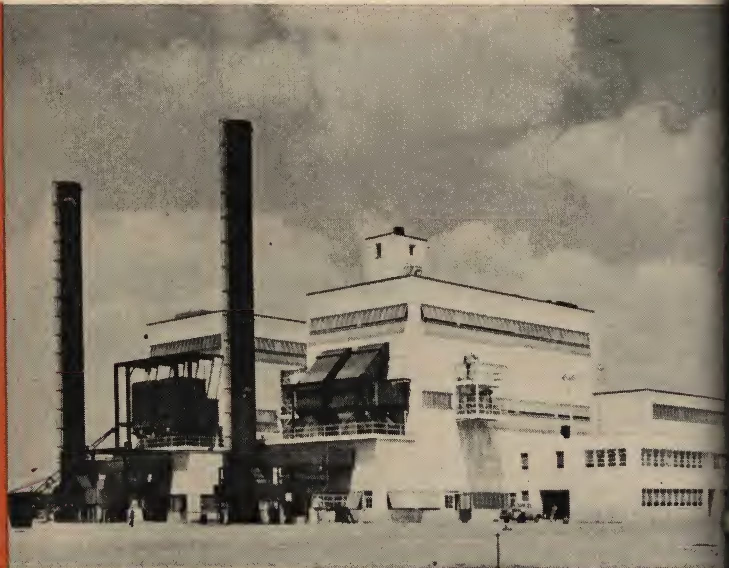
Because the glass is corrugated it is possible to design into each glass joint expansion and contraction features not available with many other products. Corrugated Wire Glass can be used with any type of roofing or siding, an important factor in many projects. The corrugations are natural rain gutters; the glass is self cleaning. Condensation will drain along the bottom of the corrugations and to the outside through suitable outlets provided in the design.

Actinic Corrugated Wire Glass

Heat and glare from sky and sun are greatly controlled by actinic glass. This glass is amber in color and was designed especially to give relief inside a building while permitting the transmission of valuable light. Actinic glass also meets the requirements of Federal Specifications DD-G-451a. This special glass is used largely on areas facing south and west where solar heat and glare are strongest. Tests prove that a floor is 20°F. cooler under Actinic Corrugated Wire Glass than under ordinary Corrugated Wire Glass. Actinic Corrugated Wire Glass brings indoors almost the same white light as that outdoors, increasing the ability to perform tasks which would otherwise be more difficult or impossible.

Pennsylvania Corrugated Wire Glass for every type of building

church: Methodist Church, Delaware County, Penna.
architects: Carroll, Grisdale and Van Alen.

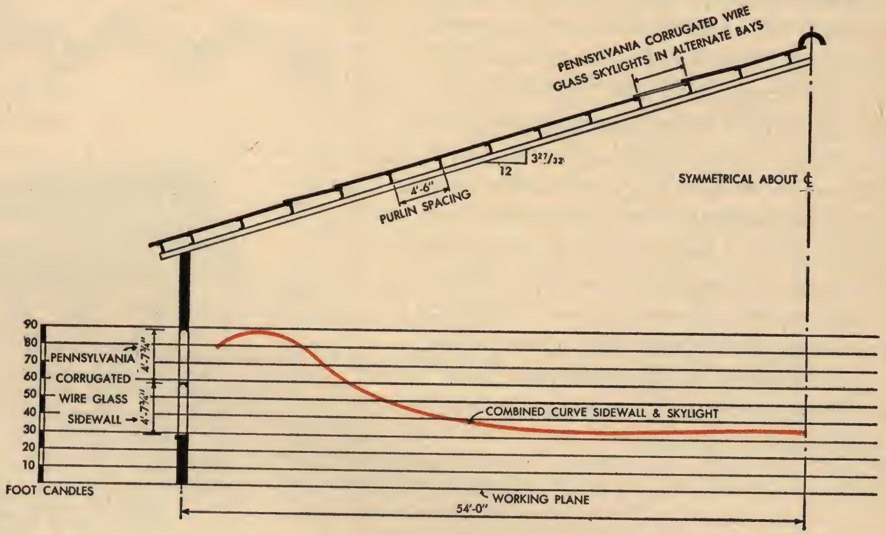


power plant: Florida Power Corp., Ellaville, Florida
cons. engrs.: Black & Veaton.

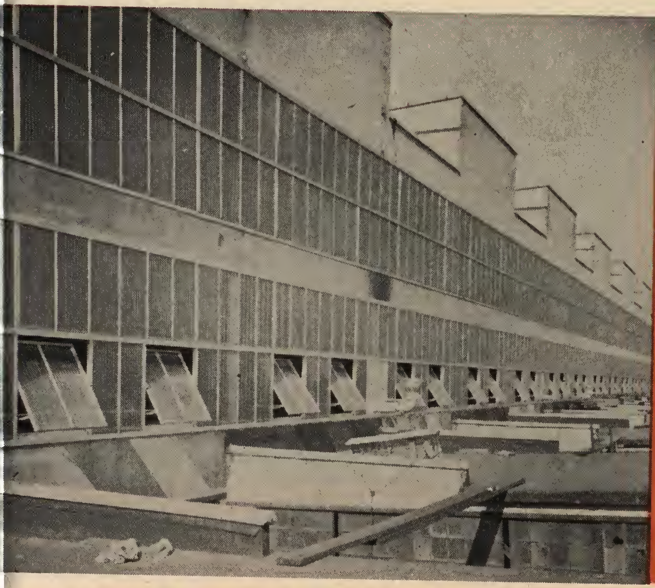
Design with Daylight

One of the many features of CWG skylights and sidewalls most appreciated by engineers and architects is that of designing in advance of constructions the amount of daylight to be admitted to the building. As illustrated by the typical charts at right, this can be predicted and the number and areas of windows and skylights planned accordingly. The Pennsylvania Wire Glass Co. will be glad to cooperate with building designers on this important factor in building planning.

Available are sample charts showing intensities for different types of skylights and variable ceiling heights. Daylight intensities are calculated at floor level with no sidewall lighting. Clean white glass is used as a basis and the prediction is always for an overcast, mid-winter day. However, similar predictions can be made for any specified set of conditions.



NOTE
INTENSITIES INDICATED ARE APPROXIMATE FOR CLEAN WHITE GLASS, AT NOON, ON AN OVERCAST MIDWINTER DAY. ASSUMED WINDOW BRIGHTNESS 150 C.P. PER SQ. FT. AT INSIDE SURFACE OF GLASS. INTENSITIES CALCULATED AT FLOOR LEVEL.



industrial: U.S. Navy Yard, Philadelphia, Penna.
Bldg. 57, Smithery and Structural Shop

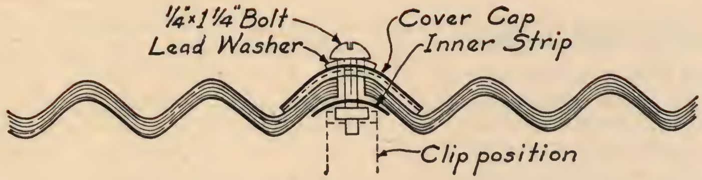
school: Center Line High School, Detroit, Mich.
architects: Brender & Van Reyendam

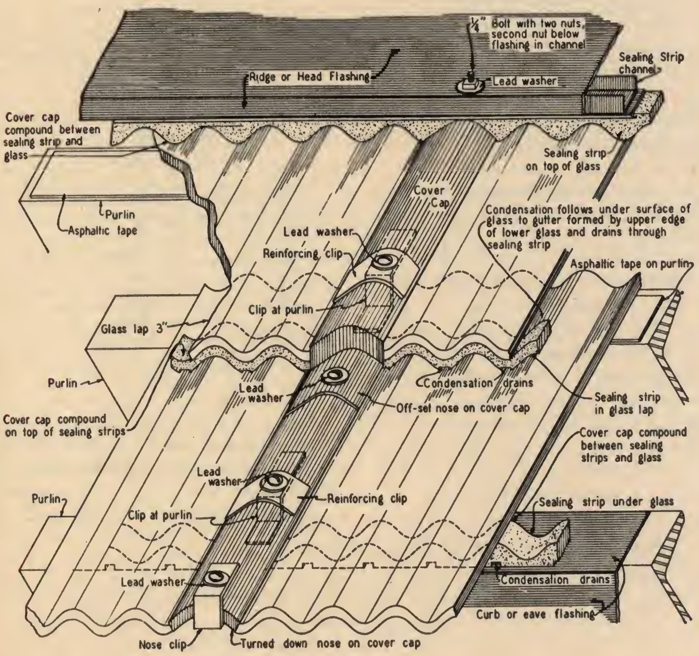
Pennsylvania Corrugated Wire Glass

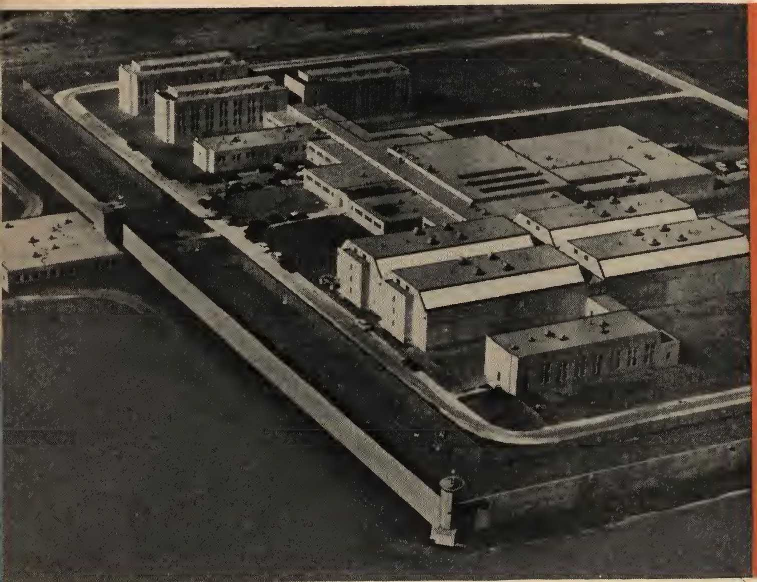
Construction is a complete unit of glass and sheet metal parts. A standard unit or sheet measures 27¾″ wide, ⅜″ thick with an overall depth of 1⅛″. Full corrugations measure 2½″. It's the corrugation plus the encased wire—which is imbedded while the glass is still in its molten stage that provides the heavy-duty strength which enables Corrugated Wire Glass to withstand punishing machinery traffic vibrations. There are no bars to corrode. Solid sheet metal parts of aluminum or copper eliminate painting problems. Expansion and contraction are provided at each glass joint to keep breakage to a minimum. No supplementary frame is used. Corrugated Wire Glass is applied directly on wood, steel or concrete.

Service

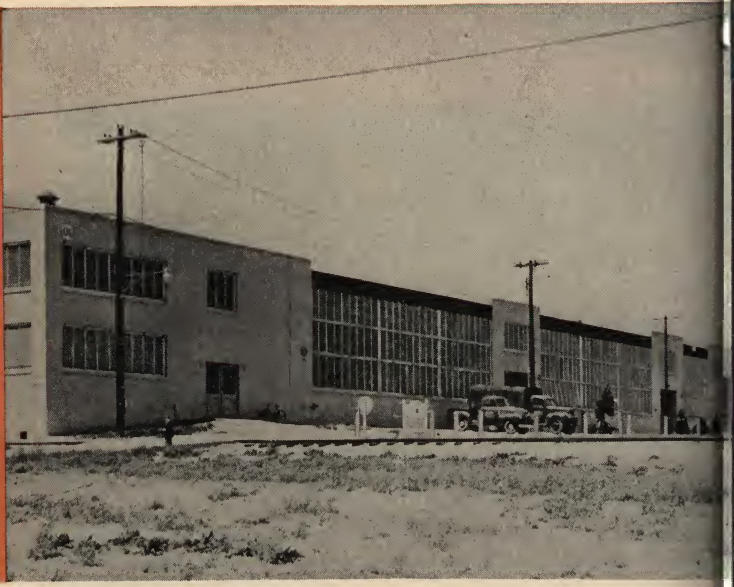
Pennsylvania Wire Glass Company maintains a FREE engineering service that will work hand-in-hand with the designer or builder. Send us a rough sketch or details concerning your own SKYLIGHT, SAWTOOTH, or SIDEWALL CONSTRUCTION problem. We shall be happy to suggest the way in which Pennsylvania Corrugated Wire Glass products can most efficiently and economically serve your needs.




¼″ Bolt with two nuts, second nut below flashing in channel
Sealing Strip channel
Ridge or Head Flashing
Lead washer
Cover cap compound between sealing strip and glass
Sealing strip on top of glass
Purlin
Asphaltic tape
Cover Cap
Condensation follows under surface of glass to gutter formed by upper edge of lower glass and drains through sealing strip
Lead washer
Reinforcing clip
Asphaltic tape on purlin
Clip at purlin
Glass lap 3″
Purlin
Lead washer
Condensation drains
Off-set nose on cover cap
Sealing strip in glass lap
Cover cap compound on top of sealing strips
Cover cap compound between sealing strips and glass
Lead washer
Reinforcing clip
Purlin
Clip at purlin
Sealing strip under glass
Lead washer
Condensation drains
Curb or eave flashing
Nose clip
Turned down nose on cover cap



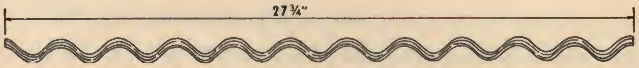
prison: Norfolk, Massachusetts
architects: Desmond & Lord



government building: Lexington Signal Depot, Lexington, Kentucky

Pennsylvania corrugated wire glass

typical specification



Standard light corrugated wire glass
Thickness—⅜″ • Overall Depth 1⅛″

"When glass must be cut in widths narrower than 27¾″, it can be supplied only in multiples of the full corrugation or 2½″—viz. 25¼″, 22¾″, 20¼″ and 17¾″.

Standard light coverage

Lts.	Width	Lts.	Width	Lts.	Width	Lts.	Width
1	2′- 4¼″	26	61′- 2½″	51	120′- 0¾″	76	178′-11″
2	4′- 8½″	27	63′- 6¾″	52	122′- 5″	77	181′- 3¼″
3	7′- 0¾″	28	65′-11″	53	124′- 9¼″	78	183′- 7½″
4	9′- 5″	29	68′- 3¼″	54	127′- 1½″	79	185′-11¾″
5	11′- 9¼″	30	70′- 7½″	55	129′- 5¾″	80	188′- 4″
6	14′- 1½″	31	72′-11¾″	56	131′-10″	81	190′- 8¼″
7	16′- 5¾″	32	75′- 4″	57	134′- 2¼″	82	193′- 0½″
8	18′-10″	33	77′- 8¼″	58	136′- 6½″	83	195′- 4¾″
9	21′- 2¼″	34	80′- 0½″	59	138′-10¾″	84	197′- 9″
10	23′- 6½″	35	82′- 4¾″	60	141′- 3″	85	200′- 1¼″
11	25′-10¾″	36	84′- 9″	61	143′- 7¼″	86	202′- 5½″
12	28′- 3″	37	87′- 1¼″	62	145′-11½″	87	204′- 9¾″
13	30′- 7¼″	38	89′- 5½″	63	148′- 3¾″	88	207′- 2″
14	32′-11½″	39	91′- 9¾″	64	150′- 8″	89	209′- 6¼″
15	35′- 3¾″	40	94′- 2″	65	153′- 0¼″	90	211′-10½″
16	37′- 8″	41	96′- 6¼″	66	155′- 4½″	91	214′- 2¾″
17	40′- 0¼″	42	98′-10½″	67	157′- 8¾″	92	216′- 7″
18	42′- 4½″	43	101′- 2¾″	68	160′- 1″	93	218′-11¼″
19	44′- 8¾″	44	103′- 7″	69	162′- 5¼″	94	221′- 3½″
20	47′- 1″	45	105′-11¼″	70	164′- 9½″	95	223′- 7¾″
21	49′- 5¼″	46	108′- 3½″	71	167′- 1¾″	96	226′- 0″
22	51′- 9½″	47	110′- 7¾″	72	169′- 6″	97	228′- 4¼″
23	54′- 1¾″	48	113′- 0″	73	171′-10¼″	98	230′- 8½″
24	56′- 6″	49	115′- 4¼″	74	174′- 2½″	99	233′- 0¾″
25	58′-10¼″	50	117′- 8½″	75	176′- 6¾″	100	235′- 5″

SUGGESTED SPECIFICATIONS FOR INSTALLATION

All supporting steel construction and metal flashings shall be provided under separate contract. This contract shall include all labor, materials, equipment and services necessary for and reasonably incidental to the erection of White or Actinic ORIGINAL Corrugated Wire Glass. Standard fittings are to be specified as 3003-H16 Aluminum (.032″ thick), 18 oz. cold rolled copper or 24 gauge galvanized steel (copper bearing: painted with aluminum) as shown on the drawings. Before any work is executed, the contractor shall furnish the architect, engineers or purchasers with complete drawings conforming to the recommendations of the manufacturer. All erection shall be as prescribed in the approved drawings of the manufacturer.

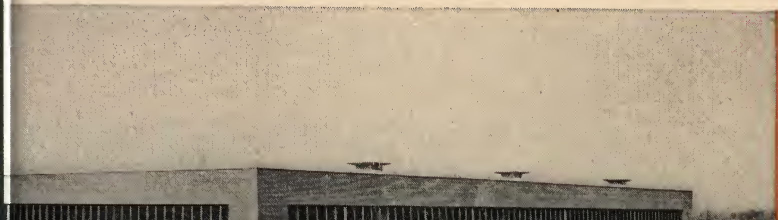
SUPPLEMENTARY SPECIFICATION NOTES

(a) No light of Corrugated Wire Glass shall exceed 27¾″ in width. No single light shall span more than 60″ clear opening without an intermediate support. On slopes of 60 degrees or greater from the horizontal, the maximum clear span should not exceed 96 inches.

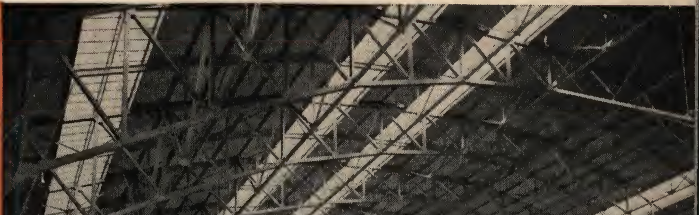
(b) Lights of glass shall be laid edge to edge (not lapping) with ½″ spaces between the lights. The open joints so formed shall be covered with exterior metal cover caps and metal inner strips which conform to the corrugations of the glass. Exterior cover caps shall have an asphaltic lining. Caps and inner strips, to complete the joint, shall be bolted together by bolts passing through the caps and inner strips and between the lights of glass approximately 9″ c. to c.

(c) Where structural supports occur, clips, engaged by bolts passing through the cover caps, shall be used to hold the glass securely in place.

(d) Each light of glass shall have a firm, even bearing. Wherever any light of glass laps over other glass, it shall be cushioned with a sealing strip.



ailroad repair shop: Southern Railway, Chattanooga, Tenn.



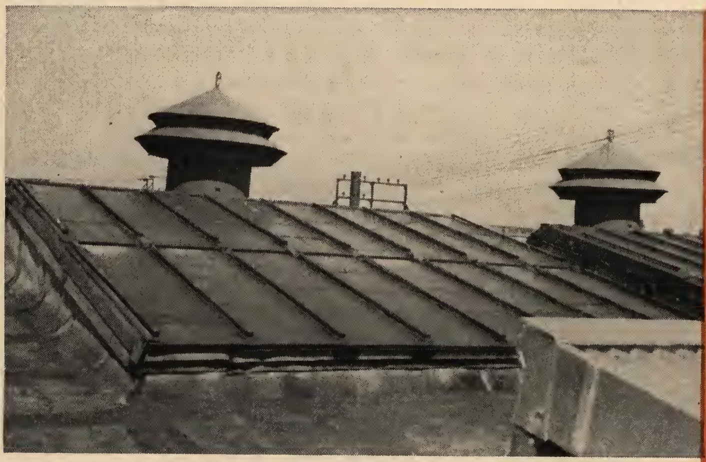
hangar: A.C. Engineering Shop & Repair Docks, Sacramento, California

replace worn-out skylights with Pennsylvania corrugated wire glass

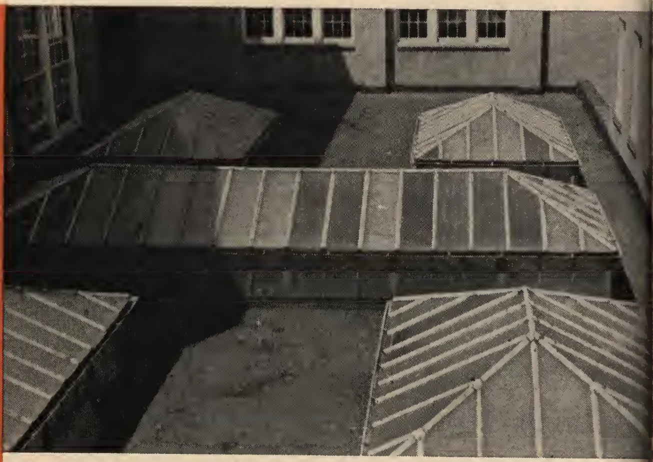
One of the strongest demonstrations of the satisfactory performance of Pennsylvania Corrugated Wire Glass Skylights is the increasing number of replacement jobs which the Company has been handling for many years. Such installations in all parts of the country have included the removal of all types of skylights of a variety of materials.

Reasons for replacements are varied; in some the flat glass previously used had become badly cracked, others where the glass was puttied in place involved a continuous maintenance expense as the putty dried out. On some the supports rusted away and on others the amount of supporting steel plus repairing of leaks with asphalt had so reduced the light within the building as to be of little value as a lighting source.

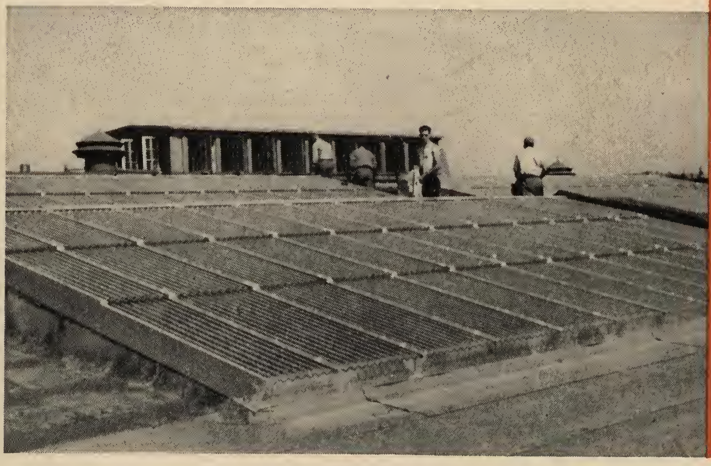
Replacing with Pennsylvania Wire Glass Skylights having wide glass sheets and aluminum construction not only reduced maintenance expense to a minimum but provided so much more useful light that the investment has been a most valuable, long-term morale builder for workmen within the building.



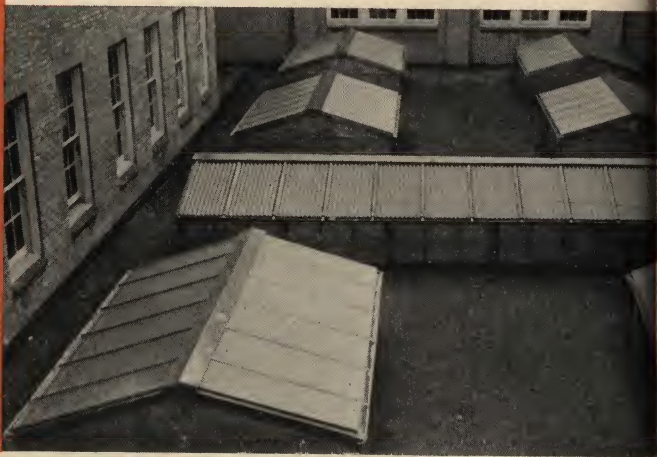
before: York Corporation, York, Penna. Flat glass skylights



before: Radnor High School, Wayne, Penna.



after: York Corporation, York, Penna.



after: Radnor High School, Wayne, Penna.

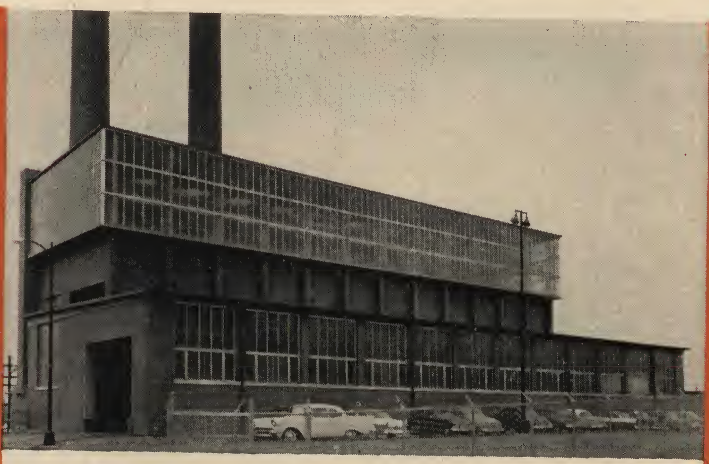
sidewalls and curtain walls with Pennsylvania corrugated wire glass

With the modern development of curtain wall construction for all types of buildings many designers have not realized that one of the earliest forms of this now popular feature was the sidewall of corrugated wire glass. For many years industrial plants of all kinds, pumping stations, armories, hangars, school gymnasiums and, in fact, all types of buildings have had sidewalls of glass. A few examples of buildings are shown below.

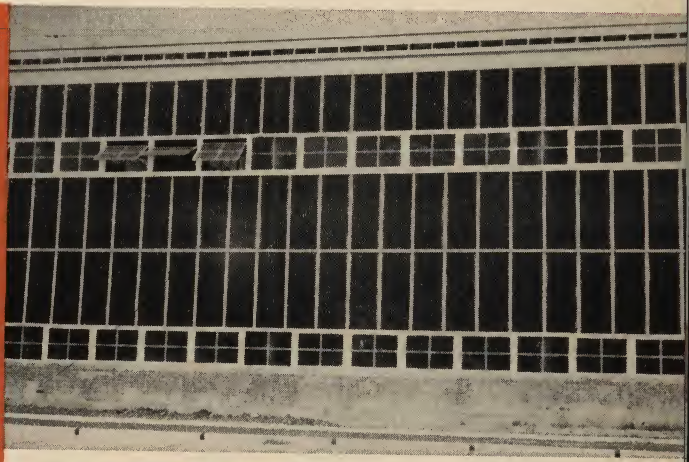
In addition to the advantage of glass as a light transmitting material in such structures, designers have found that the clean, vertical lines of corrugated wire glass harmonize with aluminum or other wall panels and assure symmetry and attractive appearance of the installation when completed.

Long experience with sidewalls of glass has given the Pennsylvania Wire Glass Company an invaluable background in this type of work. Manual on glass sidewalls on request.

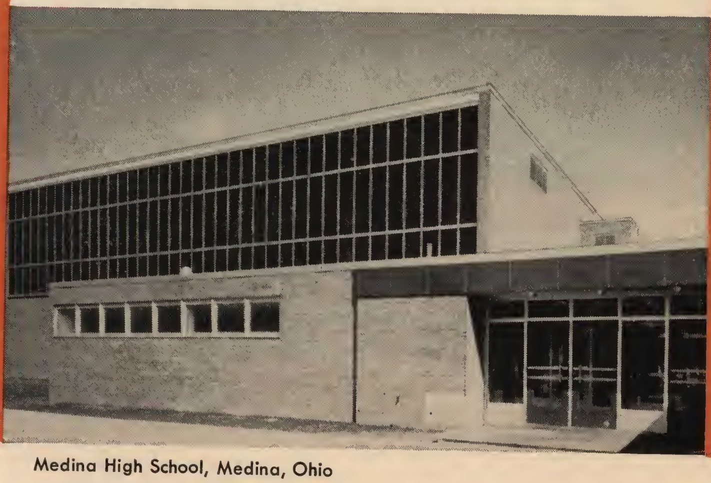
Standard methods of construction of sidewalls in masonry or corrugated siding were developed and have been proved satisfactory for many years. This experience is available to designers of buildings having curtain walls of any materials. A copy of the Pennsylvania Wire Glass manual "Glass Sidewalls" will be mailed on request.



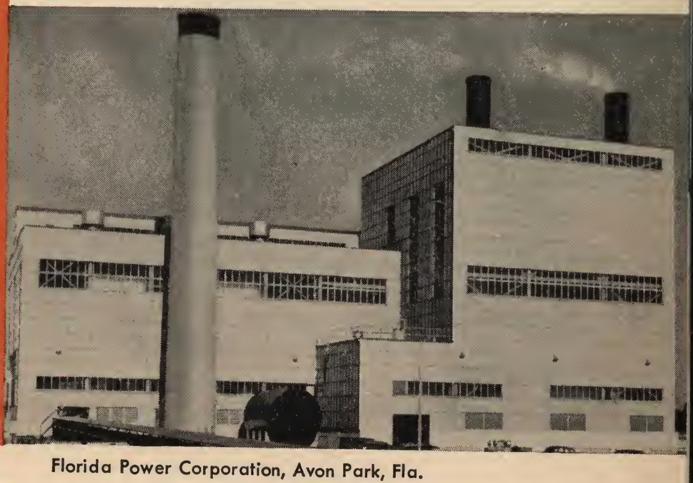
Louisville Municipal Incinerator, Louisville, Ky.



W. K. M. Building, Houston, Texas



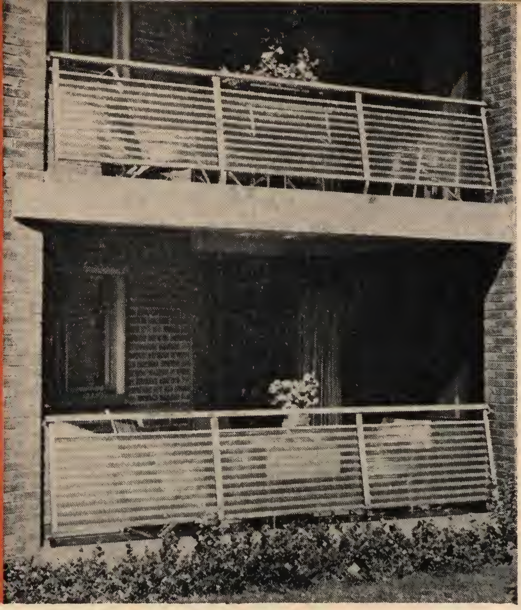
Medina High School, Medina, Ohio



Florida Power Corporation, Avon Park, Fla.

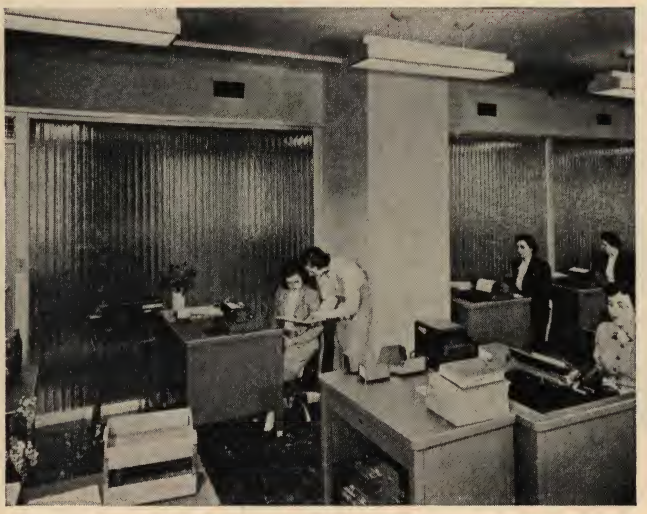
contemporary design calls for

A most versatile material, Corrugated Wire Glass has been used extensively in many locations other than skylights and sidewalls. Among these uses are interior partitions, display areas, residence and office windows, balcony or terrace railings, wind breaks and shelters and many others. A few are shown below and others will occur to the imaginative designer. A special booklet on these uses will be furnished on request.

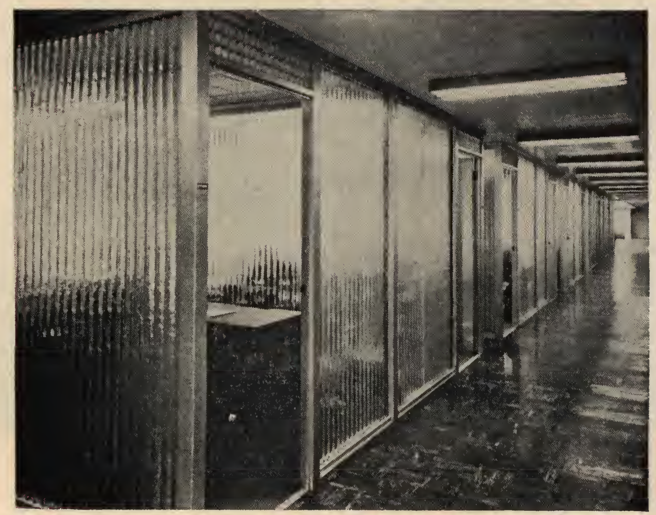


balcony railing: Sherman Apartments, Evanston, Ill.

offices: Eastern Industrial Firm, Wilmington, Delaware



offices: another view of the Wilmington offices.



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national users of Pennsylvania corrugated wire glass

Allis Chalmers Manufacturing Company
Bureau of Yards and Docks, U. S. Navy
Bethlehem Steel Company
Chesapeake & Ohio Railway Company
International Harvester Company
The Pennsylvania Railroad Company
SKF Industries, Inc.
and many others.

other Pennsylvania products

Corrugated Glass Without Wire

Actinic (Heat Intercepting and Glare Reducing Glass)

Hammered Glass, with and without wire

Hammered Actinic Glass, with and without wire

Penglass and Custom Round and Ridge Roof Ventilators

PENNSYLVANIA WIRE GLASS COMPANY

1612 Market Street, Philadelphia 3, Pa.

Representatives in Principal Cities

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